

Comment on “Rule-Governed Behavior and Self-Control in Children with ADHD: A Theoretical Interpretation”

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In recent years, several papers (including the present paper) have considered phenomena putatively relevant to rule-governed behavior (RGB). At the request of the editor, I have condensed a few of my concerns about the practice of drawing casual connections between noncompliance, failure to complete assigned tasks, etc., and basic research on RGB. These are not particularly original or new concerns, since they largely echo earlier cautions about this practice (see Schlinger, 1990; 1993; 1995). Nevertheless, the central thesis of this commentary is to reassert (see Schlinger, 1990) that if RGB is to be invoked, we should reserve its use for circumstances that merit such special usage, and in particular, when direct contingency analyses no longer seem capable of accounting for or describing the phenomena of interest in a way that leads to effective action.

To get directly to the point, the fact that children with ADHD have language and that their behavior seems unresponsive to long-term rewards, or fails to conform to expectations in various settings (schools and home), should not be taken as *de facto* evidence that RGB is implicated in the development and maintenance of ADHD. Yet this seems to be the basis of most arguments framing the analysis of ADHD in terms of “rules”, including Barkley’s account (1990). Indeed, models of ADHD might be conceptualized from a “choice” or “delay discounting” perspective equally profitably- if not more so (see Critchfield & Kollins, 2001). Especially relevant to the present case is the nature of the short-term/long-term choices made and the risk/reward ratios involved in making (or not making) healthy choices (see work by Rachlin, Baum, and others, as cited in Critchfield & Kollins, 2001). Notably, although Rachlin and other basic researchers in the experimental behavior analysis tradition are interested in phenomena relevant to the issues presented in this manuscript (e.g., self-control), their work is not discussed, presumably because these behavior analytic researchers work within a discovery model that is better characterized as “bottom-up” than “top down.” This is not surprising, given Skinner’s (1950) preference for basic research and the notion that we should ultimately draw inferences from data rather than make inferences and attempt to fit the data to them. As a result, there are few comprehensive theories in behavior analysis (the matching law, perhaps a notable exception), and none that have specifically been applied to ADHD.

Again, the fact that most children diagnosed with ADHD are verbal, by itself, does not implicate RGB as an important factor in the development of ADHD. Direct contingency shaping, modeling, and stimulus control/discrimination training, already well-developed explanatory concepts in the operant literature, might ultimately offer a much more comprehensive “account” of ADHD, if extended to account for all of the relevant phenomena associated with the disorder (but see below regarding whether such efforts would be worthwhile). To make a convincing case for an independent analysis of verbal behavior (VB) effects, it is important to illustrate the inadequacies of other approaches. The present paper makes an effort to discuss the limitations of existing direct contingency approaches, but in my view, does not do enough systematically to clarify the distinctions between RGB and direct-contingency shaping.

There is no certainty that a model based on RGB or VB will result in better intervention outcomes than models derived from direct contingency analyses; however, it is a certainty that no meaningful comparison can be made without a better conceptual understanding of RGB. A survey of theoretical papers and basic research in the behavior analytic tradition could do much to enhance the quality of research on ADHD and RGB. Some of the most important papers involving conceptual analyses of rules

and RGB have been authored by Schlinger and colleagues (see Schlinger, 1990; 1993; Schlinger & Blakely, 1987). In addition, a series of empirically-based studies with children have elaborated on some of the conceptual issues raised by Schlinger and expanded upon these ideas (see Braam & Malott, 1990, Danforth, 2002; Hupp & Reitman, 1999; Mistr & Glenn, 1992; Reitman & Gross, 1996). Most of the above-cited studies have attempted, in one way or another, to distinguish between rules that function as simple discriminative stimuli (in the direct contingency account) and contingency specifying stimuli or alternately, “function-altering stimuli” - a concept closely related to the notion of rules as setting events. The term, *function-altering stimulus* is important because it identifies an approach to distinguishing between verbal stimuli more generally, and “rules” or contingency statements that have effects that go beyond ordinary verbal stimuli (many of these stimuli can be described simply as verbal discriminative stimuli). Additionally, when the delivery of the rule necessitates the presence of the experimenter, demand characteristics (or discriminative functions associated with the presence of the “experimenter”) confound the influence of the verbal stimulus. Unfortunately, it does not appear that these kinds of potential effects (i.e., demand characteristics) are controlled for in most research involving rules, RGB, or the compliance literature in general.

Another resource that might be consulted (in addition to excellent papers on rules as contingency-specifying stimuli by Schlinger) is an edited text by Hayes (1989) “Rule Governed Behavior: Contingencies and Instructional Control”. Of special note is a discussion of “tracks”, which suggests that some rule following might be entirely mediated by the reinforcers associated with following or not following rules. However, when experimenters are present during the delivery of the rule, and are known to the participant, it seems impossible to rule out social mediation (pliance) (see Himeline, 1989, pp. 237-238; Poppen, 1989, pp. 335-339). Barry’s review appears to describe scenarios where plys and tracks may be in play. Most likely, both sources of reinforcement mediate compliance (e.g., socially-mediated reinforcement like peer or teacher attention); a very central concept for applied researchers studying disruptive behavior disorders like ADHD, ODD, and CD. Some have even questioned whether it is really possible to make clear distinctions between RGB and contingency-shaped behavior (Chase & Danforth, 1991).

Also relevant to the analysis of children’s behavioral choices might be Poppen’s (1989) discussion of “congruants and contrants”. With congruants, the rule-giver and the environment provide similar consequences, whereas contrants involve opposing consequences. With congruents or contrants, behaviors specified in the rule may involve either complementary or competing reinforcement in terms of the time (immediate-delayed), or source factors (social versus non-socially mediated). For example, in many studies of behavioral problems it seems that socially-mediated rules (plys) are used to supplement the inadequate or competing control from environmental contingencies supporting (or rather failing to support) appropriate social behavior (see also Malott, 1989). Following from Poppen (1989), one might also imagine a scenario where the general (and incomplete) rule, “crime doesn’t pay”, conflicts with real-world contingencies indicating a low-probability of punishment for rule-breaking. Suffice to say, the term “rule” is complex and could benefit from careful consideration in future discussions of RGB. Additional resources are suggested at the end of this commentary¹.

Behavior Analytic Concerns

Based on my reading of the present manuscript, none of the existing theoretical models of ADHD (e.g., Barkley’s Unified Theory, Sergeant’s Cognitive-Energetic Model, Sagvolden’s Dynamic Developmental Theory) appear consistent with the overall theoretical aims of behavior analysis. Specifically, much of the theorizing emphasizes explanatory concepts that operate within the individual and appear likely to defy falsification. Of course, this is no fault of the author, and the extent to which any given model of human behavior invoking RGB does or does not accord with behavior analytic principles would only be of concern to those persons that equate the term “rule governed behavior” with a behavior

analytic account. Nevertheless, from a behavior analytic perspective, one ought to be very suspicious about theories that attempt to help us “account for” or “understand” the observed deficits that are said to define the ADHD. The reason for my skepticism derives from a fundamental assumption of behavior analysis, and requirement of any behavioral theory, specifically, that it be useful! Thus, any theory of RGB and ADHD would be expected to result in both increased understanding and, more importantly, behavioral practices and interventions that improve the life circumstances of children diagnosed with ADHD.

Much of the theoretical work cited here smacks strongly of what Skinner called “explanatory fictions”, or explanations that are more descriptive than causal and rely heavily on reification of the concepts discussed (in logical terms, reification occurs when an action like “attending” is transformed into a thing, or noun, aka. “attention”). Because only objects existing in the physical world can influence the behavior of other objects, we should be cautious about causal descriptions of human action that reify them. Indeed, to a striking degree, the theories reviewed here seem content to summarize (i.e., account for, in post hoc fashion) the kinds of deficits in performance observed in many (but hardly all) children and adolescents diagnosed with ADHD. Sadly, many of the theories seem to posit neurological deficits with specious support in the existing literature (see Baumeister & Hawkins, 2001) and that may be extremely difficult to subject to empirical scrutiny (e.g., energy states, executive functions, etc.). As Skinner (1950) warned, many of the processes invoked as underlying causal factors, such as “cognitive impulsiveness”, must be inferred from the behaviors that they are alleged to “explain”, a clear example of an explanatory fiction (tautology).

There are other reasons to be skeptical about the kinds of model building efforts described in this paper. First, based upon recent evidence suggesting that symptoms of ADHD are actually poor predictors of long-term outcome, Pelham, Fabiano, and Massetti (2005) have suggested that assessment and treatment for ADHD should focus more on functional impairment than diagnosis. If the validity of the ADHD diagnosis is itself in question, then models purporting to explain this diagnostic entity may ultimately prove of to be of limited utility. A second reason for caution about the model building efforts described here concerns the issue of generalization and maintenance. Specifically, in the discussion of the work by Barry and Haraway (2005), one issue not raised was the poor dissemination of Stokes and Baer’s (1977) contingency-based analyses of generalization and maintenance. Stokes and Osnes (1989) concluded that, on the whole, applied researchers have done a very poor job of “planning for generalization” or programming maintenance of effects. Thus, it is hardly surprising such effects are rarely observed in clinical populations (Stokes and Baer termed such adventitious generalization effects, “Train and Hope” generalization). A third and final concern about the merits of the theoretical models presented here, relates to the substance of recommendations for practice deriving from the theoretical models. Specifically, towards the end of the paper, the author suggests that researchers and interventionists pay more attention to antecedent factors, stimulus control, generalization, and maintenance of skills. Of course, these kinds of considerations are central to work in behavior analysis and have been so for many years (see Kazdin, 2001). Moreover, further “advances” in treatment for ADHD do not seem dependent in any way on the kind of theorizing presented here. This is especially apparent at the end of the review when the author recommends that “antecedent strategies such as adding structure and predictability, making rules, schedules, and routines explicit, etc.” be adhered to. Indeed, these kinds of interventions form the bedrock of most classroom-based interventions children with behavioral problems and are the most frequently implemented accommodations stemming from a child’s classification as “other health impaired” in school settings across the country (see Alberto & Troutman, 2003).

Summary

This paper should be of interest to readers of JEIBI and persons interested in contemporary theoretical models of ADHD. The author should be commended for beginning the difficult journey towards a better understanding of RGB, self-control, and ADHD. However, as readers of this commentary might conclude, I have little affinity for the kind of theorizing described in this paper. While I certainly do not wish to “shoot the messenger”, I remain skeptical that the kind of model development described here will lead to better interventions for children diagnosed with ADHD, and I am unaware of any data suggesting that treatment outcomes for ADHD-diagnosed children have improved since such theorizing began. Indeed, although this review makes a number of references to “advances” and “benefits” stemming from the development of new conceptual models, one wonders, who is benefiting? We should be cautious in asserting the value of theory, and advances should not be assumed. “New” does not necessarily equate with “improved”. A behavior analytic model demands demonstrable improvements in client outcomes before we declare, “mission accomplished.”

References

- Alberto, P., & Troutman, A. (2003). *Applied behavior analysis for teachers (6th edition)*. New York, NY: Prentice-Hall.
- Barry, L. M., & Haraway, D. L. (2005). Self-management and ADHD: A literature review. *The Behavior Analyst Today*, 6(1), 48-63.
- Barkley, R. A. (1990). *Attention deficit hyperactivity disorder: A handbook for diagnosis and treatment*. New York: Guilford.
- Baumesteier, A. A., & Hawkins, M. F. (2001). Incoherence of neuroimaging studies of attention deficit/hyperactivity disorder. *Clinical Neuropharmacology*, 24, 2-10.
- Braam, C., & Malott, R.W., (1990). "I'll do it when the snow melts": The effects of deadlines and delayed outcomes on rule-governed behavior in preschool children. *The Analysis of Verbal Behavior*, 8, 67- 76.
- Chase, P., & Danforth, J. S. (1991). The role of rules in concept formation. In L. J. Hayes and P. N. Chase (Eds.). *Dialogues on verbal behavior*. Reno, NV: Context Press.
- Critchfield, T. S., & Kollins, S. H. (2001). Temporal discounting: Basic research and the analysis of socially important behavior. *Journal of Applied Behavior Analysis*, 34, 101-122.
- Danforth, J. S. (2002). Altering the function of commands presented to boys with oppositional and hyperactive behavior. *The Analysis of Verbal Behavior*, 18, 31-50.
- Hineline, P. (1989). Correlated hypothesizing and the distinction between contingency-shaped and rule-governed behavior. In S. C. Hayes (Ed.), *Rule-governed behavior: Cognition, contingencies, and instructional control*. New York: Plenum
- Hupp, S.D.A., & Reitman, D. (1999). The effects of stating contingency-specifying stimuli on compliance in children. *The Analysis of Verbal Behavior*, 16, 17-27.
- Kazdin, A. E. (2001). *Behavior modification in applied settings (6e)*. Belmont, CA: Wadsworth.

- Malott, R. W., (1989). The achievement of evasive goals: *Control by rules describing contingencies that are not direct acting*. In S. C. Hayes (Ed.), *Rule-governed behavior: Cognition, contingencies, and instructional control*. New York: Plenum.
- Mistr, K. N., & Glenn, S. S., (1992). *Evocative and function-altering effects of contingency-specifying stimuli*. *The Analysis of Verbal Behavior*, 10, 11-21.
- Pelham, W. E., Fabiano, G. A., & Massetti, G. M. (2005). Evidence-based assessment of Attention Deficit Hyperactivity Disorder in children and adolescents. *Journal of Clinical Child and Adolescent Psychology*, 34, 449-476.
- Poppen., R. (1989). Some clinical implications of rule-governed behavior. In S. C. Hayes (Ed.), *Rule-governed behavior: Cognition, contingencies, and instructional control*. New York: Plenum.
- Reitman, D., & Gross, A. M. (1996). Delayed outcomes and rule-governed behavior among "noncompliant" and "compliant" boys: A replication and extension. *The Analysis of Verbal Behavior*, 13, 65-77.
- Schlinger, H. D. (1990). A reply to behavior analysts writing about rules and rule-governed behavior. *The Analysis of Verbal Behavior*, 8, 77-82.
- Schlinger, H. D. (1993). Separating discriminative and function-altering effects of verbal stimuli. *The Behavior Analyst*, 16, 9-24.
- Schlinger, H. D. (1995). *A behavior analytic view of child development*. New York: Plenum.
- Schlinger, H. D., & Blakely, E. (1987). Function-altering effects of contingency-specifying stimuli. *The Behavior Analyst*, 10, 41-45.
- Skinner, B. F. (1950). Are theories of learning necessary? *Psychological Review*, 57, 193-216.
- Stokes, T. F., & Baer, D. M. (1977). An implicit technology of generalization. *Journal of Applied Behavior Analysis*, 10, 349-367.
- Stokes, T. F., & Osnes, P. G. (1989). The operant pursuit of generalization. *Behavior Therapy*, 20, 337-355.

Footnote

¹Also strongly recommended would be Context Press volumes entitled *Dialogues on Verbal Behavior* (1991) and *Understanding Verbal Relations* (1992). Especially interesting are contributions by Chase and Danforth (1991) and a subsequent commentary by Andronis (1991) in the former publication.

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